

REMARKS

Claims 8-13 remain active in this application. Claim 16 has been added. Claims 1-7, and 14-15 have previously been canceled. Claims 8-10 have been amended. Support for the amendment of claim 8 is found throughout the application, particularly in Figures 7A, 7B, 12A and 12B and the description thereof on page 6, lines 27 through line 6 on the following page, and page 8, lines 1-3. Support for the amendment to claim 9 is particularly found in Figures 4A and 4B and the description thereof on page 6, lines 11-15. Further, support for the amendment to claim 10 is found particularly in Figures 9A and 9B and the description thereof on page 7, lines 17-20. Support for the addition of claim 16 is found throughout the application, particularly in Figures 8A, 8B, 13A, 13B, and 13C, and the description thereof on page 7, lines 7-12, and page 8, lines 4-16. No new matter has been introduced into the application.

The Examiner has rejected to claims 8, 9, and 12 under 35 U.S.C.102(e) as being anticipated by Maszara. This rejection is respectfully traversed, particularly in view of the amendment to claim 8 which further emphasizes the existing differences between Maszara and the current invention.

Referring to Figure 3 of Maszara, and col. 3, lines 7-17 of the same, Maszara specifically shows that the SOI layer 14 is separated into silicon islands 18. The etching is then performed along the entire perimeter of each of the silicon islands, resulting in an undercut etch underneath all areas of the perimeter. As a result, the edges of the silicon island are all either pushed up or pulled down depending on the tensile or compressive properties of the material ultimately used to fill the recess 22. As the silicon island is planar, it does not react well to these multiple points of pressure along the entire perimeter. Consider a sheet of paper. The four edges cannot be pushed up (or pulled down) simultaneously while the center remains in its original position while maintaining an even and subtle curve. Instead, the silicon island will resist curvature, and the tensile or compressive properties desired of the channel region will be more difficult to achieve. It is also possible that the tensile and compressive properties may vary and coexist within the channel area.

Adversely, the present invention applies pressure to only selected areas of the perimeter and not the entire perimeter. The end regions or the middle regions

of the channel may be the portion selected for etching, however, not both on the same field effect transistor. As a result of end region selection, two ends of the channel are lifted upward causing the channel to bow downwardly towards the mid-point of the two selected end regions. However, the profile of the curve of the channel 22 as shown in Figure 1 is consistent throughout the wafer, forming a simple curve rather than a complex curve as demonstrated in Maszara. Further, the wafer should demonstrate a greater ease of curvature than Maszara as the wafer is only being influenced along one axis. The result is maximum compression of the current carrying part of the channel 22A in Figure 1 and maximum carrier mobility for the pFET.

Similarly, the selection of the middle regions of the channel perimeter for etching and compressive film deposit will lift the channel region upwards in the middle of the channel, an inverse reaction to that of end region selection, but otherwise demonstrating the same characteristic by providing a simple curve, rather than a complex curve, allowing tensile stress to be easily applied to the current carrying area of the channel 22A in Figure 2 and thereby maximizing the carrier mobility for the nFET.

In view of the foregoing, Maszara provides a FET structure with an undercut area surrounding the entire perimeter of the channel structure, wherein a stressed material is deposited to provide stress on all four side regions of the channel, resulting in inconsistent tensile or compressive properties on the current carrying area of the channel and opposing forces, failing to maximize the stress provided by the stressed material. For these reasons, it is clear that the current invention is not taught by Maszara, and is superior to the prior art in both functionality and ease of manufacture. As this is the case, the rejections to claim 8 and its dependants, claims 9 and 12, under 35 U.S.C. 102(e) are respectfully traversed.

Since all rejections, objections and requirements contained in the outstanding official action have been fully answered and shown to be in error and/or inapplicable to the present claims, it is respectfully submitted that reconsideration is now in order under the provisions of 37 C.F.R. §1.111(b) and such reconsideration is respectfully requested. Upon reconsideration, it is also respectfully submitted that this application is in condition for allowance and such action is therefore respectfully requested.

If an extension of time is required for this response to be considered as being timely filed, a conditional petition is hereby made for such extension of time. Please charge any deficiencies in fees and credit any overpayment of fees to International Business Machines Corporation Deposit Account No. 09-0458.

Respectfully submitted,



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